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(54) Title: CLUTCH AND/OR TRANSMISSION SYSTEM, AND METHOD FOR STARTING UP A CLUTCH AND/OR TRANSMISSION SYSTEM

(57) Abstract: The invention relates to a clutch and/or transmission system having an actuating system including a non-volatile memory for system- specific data.



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Clutch and/or transmission system, and method for starting up
a clutch and/or transmission system

The invention relates to a clutch and/or transmission device having an actuating system. The invention also relates to a method for starting up such a clutch and/or transmission system.

A method for carrying out a learning procedure with a transmission of a vehicle is known from German published unexamined application DE 2005 000 888 A 1, wherein parameters are learned in a transmission actuating system and/or clutch actuating system, the learning procedure being carried out on a test stand prior to the final assembly of the transmission, with the clutch secured. From German published unexamined application DE 10 2007 040 485 A 1, a method for generating adaptation data for shifting sequences of an automatic transmission is known, wherein component characteristics that have an influence on a shifting parameter are ascertained on the production line, where, based on these characteristics, correction values are ascertained or calculated which are stored in a control device at the end of the line, and where at the end of the line the corresponding correction value is saved in the non-volatile memory of the electronic control device.

The object of the invention is to further simplify the start-up of clutch and/or transmission systems.

The object is fulfilled in the case of a clutch and/or transmission system having an actuating system, in that the actuating system includes a non-volatile memory for system-specific data. In the case of clutch and/or transmission systems, the possibility exists of setting the start-up in motion with the aid of diagnostic devices or testers. At start-up, prior to the first use of the clutch and/or transmission system, system-specific parameters are adapted on the basis of existing tolerances of the individual components. A control device may be used here which receives and processes commands during the start-up and triggers the connected actuating system. The control device may be solidly connected to the clutch and/or transmission system. However, the control device may also only be connected to the clutch and/or transmission system at the time of start-up. The actuating system is needed in order to move to the particular clutch or transmission positions, and is a component of the clutch and/or transmission system.

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According to an essential aspect of the invention, the system-specific parameters ascertained in a first start-up are stored in the form of specific data in the actuating system, not only in a control device or a testing or checking device. This has the advantage that the system-specific data are present in the particular clutch and/or transmission system, even if the control device or testing and/or checking device used at the first start-up is no longer available at a subsequent installation of the clutch and/or transmission system in a motor vehicle. As a result, a new determination of the system-specific parameters when installing the clutch and transmission system can be avoided. This reduces significantly the logistic overhead and the time for installing the clutch and/or transmission system in a motor vehicle.

A preferred exemplary embodiment of the clutch and/or transmission system is characterized in that the actuating system includes a processor for processing system-specific data. The dedicated processor in the actuator provides the advantage that the system-specific data can be processed directly in the actuator. It may be possible to use an already existing processor of a conventional actuator to process the system-specific data.

Another preferred exemplary embodiment of the clutch and/or transmission system is characterized in that the actuator includes a bus system for communicating with a control device and/or a testing and/or checking device. The bus system is preferably designed as a CAN (controller area network) bus system, and enables unlimited access to the system-specific data stored in the actuating system.

The object stated above is fulfilled alternatively or additionally in the case of a method for starting up a previously described clutch and/or transmission system, in that at a first start-up system-specific parameters are adapted and stored in the non-volatile memory of the actuating system. The first start-up of the clutch and/or transmission system usually takes place in a transmission factory, where the required parameters are adapted by activating learning routines. The learning routines are triggered for example by means of a tester or by a test stand. According to an essential aspect of the invention, the learned parameters are then stored not in a control device or a testing and/or checking device, but in the actuating system.

A preferred exemplary embodiment of the method is characterized in that the system-

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specific parameters are adapted by triggering learning routines by means of a/the testing and/or checking device. The triggering of the learning routines can occur in the same or a similar manner as with conventional clutch and/or transmission systems. But the parameters ascertained with the aid of the learning routines are then stored or recorded at a different location.

Another preferred exemplary embodiment of the method is characterized in that the data stored in the non-volatile memory of the actuating system are transferred to a control device and/or testing and/or checking device after the clutch and/or transmission system is installed. The control device may be a separate control device, or a control device internal to the vehicle. Through the clear assignment of the stored system-specific data, the logistic overhead when using separate control devices or separate testing and/or checking devices is significantly reduced.

Another preferred exemplary embodiment of the method is characterized in that the control device and/or the testing and/or checking device communicate with the actuating system via the bus system. The bus system is preferably designed so that the actuating system is able to communicate both with vehicle-internal control devices and also with separate control devices or separate testing and/or checking devices.

Another preferred exemplary embodiment of the method is characterized in that the control device and/or the testing and/or checking device exchanges data and/or commands with the actuating system via the bus system. That greatly simplifies the logistic overhead when installing the clutch and/or transmission system in a motor vehicle.

Another preferred exemplary embodiment of the method is characterized in that a release or read-out of the data stored in the non-volatile memory of the actuating system is initiated by an external request. The data stored in the actuating system can then be used directly.

Another preferred exemplary embodiment of the method is characterized in that the external request to release or read out the data stored in the non-volatile memory of the actuating system is triggered by a/the control device, or by a/the testing and/or checking device. Assigning the stored data to the particular clutch and/or transmission system does not give rise to any coordination overhead.

Additional advantages, features and details of the invention derive from the following description, in which various exemplary embodiments are described in detail.

The invention relates to a clutch and/or transmission system, which is manufactured for example in a transmission factory. The clutch and/or transmission system includes an actuating system with actuators that are needed to move to various clutch or transmission positions. The actuators may be hydrostatic actuators. The actuators are mounted on the clutch and/or transmission during fabrication, so that they are solidly connected to the latter.

According to an essential aspect of the invention, the actuators are equipped with their own processor and their own memory. Furthermore, a bus system is installed which enables communication between the control device or a testing and/or checking device and the actuating system. An activity desired by the control device or the testing and/or checking device for the particular actuator is specified via the bus system. In that process, data or commands are exchanged between the control device or the testing and/or checking device and or the actuators via the bus system.

According to an essential aspect of the invention, system-specific parameters that are ascertained in the first start-up, for example in the transmission factory, are stored in the actuating system of the particular clutch and/or transmission system. An installation of the clutch and/or transmission system which is started up for the first time takes place for example in a vehicle factory. In the vehicle factory, a new or different control device or a new or different testing and/or checking device may be connected to the clutch and/or transmission system.

The invention offers the advantage that the data stored in the actuating system may be requested and read out in a simple manner using the new or other devices. That makes a new initial start-up in the vehicle factory superfluous. The request of the data from the actuating system may be made by an external request, for example by the testing and/or checking device, or else independently by a control device internal to the vehicle, for example if it is detected that there are not yet any parameters stored in the control device and that a connection with the actuating system has been made for the first time. An intelligent actuating system is created by the invention, whereby start-up procedures are

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optimized or simplified.

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Claims

1. A clutch and/or transmission system having an actuating system, characterized in that the actuating system includes a non-volatile memory for system-specific data.
2. The clutch and/or transmission system according to Claim 1, characterized in that the actuating system includes a processor for processing system-specific data.
3. The clutch and/or transmission system according to one of the preceding claims, characterized in that the actuating system includes a bus system for communicating with a control device and/or a testing and/or checking device.
4. A method for starting up a clutch and/or transmission system according to one of the preceding claims, characterized in that at a first start-up system-specific parameters are adapted and stored in the non-volatile memory of the actuating system.
5. The method according to Claim 4, characterized in that the system-specific parameters are adapted by initiating learning routines by means of a/the testing and/or checking device.
6. The method according to Claim 4 or 5, characterized in that the data stored in the non-volatile memory of the actuating system are transferred to a control device and/or a testing and/or checking device after the clutch and/or transmission system is installed.
7. The method according to Claim 6, characterized in that the control device and/or the testing and/or checking device communicates with the actuating system via the bus system.
8. The method according to Claim 6 or 7, characterized in that the control device and/or the testing and/or checking device exchanges data and/or commands with the actuating system via the bus system.
9. The method according to one of Claims 4 through 8, characterized in that a

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release or read-out of the data stored in the non-volatile memory of the actuating system is initiated by an external request.

10. The method according to Claim 9, characterized in that the external request to release or read out the data stored in the non-volatile memory of the actuator is initiated by a/the control device and/or the testing and/or checking device.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F16D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	DE 10 2006 035112 A1 (MAGNA POWERTRAIN AG & CO KG [AT]) 31 January 2008 (2008-01-31) abstract paragraphs [0017], [0047] -----	1-10
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X	DE 10 2007 040485 A1 (ZAHNRADFABRIK FRIEDRICHSHAFEN [DE]) 20 November 2008 (2008-11-20) cited in the application the whole document ----- -/-	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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